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AUTHOR Tom, Alice K.
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ABSTRACT

The use of nontraditional college admission variables in the prediction of academic success was assessed with 444 freshmen entering the University of California, Davis, under the Special Action process (wavering of admission requirements). For fall 1978, 1979, 1980 special entrants, attention was directed to college applications, including high school grades and courses completed; and responses to the College Board's Student Descriptive Questionnaire, which is appended. Nontraditional variables included: athletic interest; self-rated leadership/communication skills; music, art, dance interests; and extracurricular activities. Cumulative college grade point average and persistence (number of quarters registered) were used as outcome criteria. Multiple regression and discriminant analyses indicated that (1) both traditional and nontraditional variables are influential predictors of academic achievement; and (2) the predictive power of traditional variables decrease with time while that of nontraditional variables may not. Important nontraditional variables included interest in basic skills assistance, academic honor courses, and high school grades in four subjects. (SW)

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NON-TRADITIONAL PREDICTORS OF ACADEMIC SUCCESS FOR SPECIAL ACTION ADMISSIONS

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Alice K. Tom
Office of Student Affairs Research
and Information
November 1982

Non-traditional Predictors of Academic Success for Special Action Admissions

Summary

The purpose of this paper is to identify and assess the applicability of non-traditional variables in the prediction of academic performance for college admission. For the freshman class of Fall 1978, 1979, 1980 entering under the Special Action process at the University of California, Davis, a stepwise multiple regression and stepwise multiple discriminant analysis was conducted using student self-reports from the College Board's Student Descriptive Questionnaire which asks students to rate their academic skills, interests, and extra-curricular activities. Cumulative college GPA and persistence were used as the two outcome criteria.

Although several non-traditional variables were identified as predictor factors, these results do not imply that academic development variables should be ignored in deference to non-traditional variables for student selection. The multiple regression analyses identified a combination of key traditional and non-traditional variables that were the best predictors of college GPA and persistence (number of quarters registered). Often, traditional variables had more predictive validity than non-traditional variables even for this non-traditional and highly varied population of students. However, these results do tell us that "success" in college is dependent on a number of variables representing both the academic and non-academic development of students.

The findings of the multiple regression analyses coupled with the multiple discriminant analyses propose that (1) both traditional variables and non-traditional variables are influential predictors of academic achievement, and (2) the predictive power of traditional variables decreases with time while that of non-traditional variables may not. That is, traditional variables are more effective predictors than non-traditional variables for the relatively heterogeneous population of freshman students. Persistence and GPA of the more academically homogeneous group of sophomores is as well predicted by non-traditional as traditional variables. In addition, the discriminating ability of the current admission criteria to predict persistence of this special group of students is limited. Thus the use of non-traditional variables can be expected to be important for selection, even though they are not very useful for short term prediction.

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INTRODUCTION

The prediction of academic performance presents many problems to both college administrators and researchers. The primary difficulty is the isolation of variables or factors that accurately and consistently identify students who possess the attributes associated with academic achievement and the ability to succeed in college.

Attempts to predict college academic performance have historically been based on a student's high school record, grade point average, and standardized test scores. This study asks if there are other non-academic factors that can be used to increase the predictive ability: What value should be placed on a student's high school extracurricular activities, family background or ethnicity in the admissions policy? Are special talents, such as athletic ability or artistic interests, given due consideration by admissions officials?

In January 1978, the Regents of the University of California approved an increase in the percentage of freshmen and advanced standing applicants from disadvantaged segments of society to be admitted by special action effective Fall Quarter 1979. Special action students are defined as freshmen or advanced standing students who have not met the entrance requirements, but who have demonstrated academic potential. In addition, the Regents specified that this increase would be in effect for an experimental period of five years. At the conclusion of the five year period, a review and evaluation of the significant events of the program would be presented to them. Each campus was requested to determine what systematic experiments or studies should be undertaken in special action admissions to test various alternative methods of selecting students for admission. The goal of these individual research efforts is to identify alternate means of assessing a student's chances of academic success, including factors other than grade point averages and test scores. This report focuses on the types of non-traditional information that may be considered relevant in University admissions policy.

DESCRIPTION OF STUDY:

Current admissions policy at UC Davis distinguishes between regularly admissible and special action students. Regularly admissible students are freshmen or advanced standing students who have met the standard scholastic entrance requirements, which emphasize entering academic record, grade point average and test scores. There is minimal consideration placed on a student's non-academic background in the decision to admit these students. Special action students are freshmen or advanced standing individuals who have not met the standard entrance requirements, but who have demonstrated academic potential by non-standard means.

Background: In 1978-1979, the UC Davis Admissions and Enrollment Committee developed a system of special action admission procedures that involved three criteria: (1) minimum entrance grade point average, (2) number of A-F subject omissions,* and (3) non-academic factors such as special talents in athletics or arts, evidence of unusual achievements or the lack of educational opportunity. Most students admitted by special action are admitted by "formula," a numeric combination of grade point average and subject requirements wherein a low grade point average can be

offset by a relatively strong performance in a number of subject area courses. A minority of special action students are admitted by "committee"; in exceptional cases, where a student's academic record does not meet either regular admission criteria or "formula" special action criteria, a committee of faculty, students and admission staff reviews the student's record for alternative indicators of academic ability. To date, there has been no comprehensive review of the predictive value of special action admission procedures.

Because of the specific nature of this research project, and because of the need to avoid the complexity of studying both freshmen and transfer students, the subjects chosen for this study were special action freshmen entering in Fall 1978, 1979 and 1980. Of particular interest is the student's University performance, which is measured as (1) cumulative UC Davis grade point average and (2) persistence rate.

Objectives: The primary purpose of this research is to examine alternative methods of selecting special action students. The following objectives were incorporated into the research design:

1) To identify alternative/non-traditional predictor factors for decision-making criteria in the admission of special action applicants.

2) To determine the effectiveness (predictive validity) of these alternative decision-making criteria.

3) To investigate new non-traditional data collection procedures for admission evaluators to use objectively with applicants who are not regularly admissible.

Data Sources: Three information sources were used in this study. The first source is the College Board's Student Descriptive Questionnaire (SDQ). When students register for the College Board's Scholastic Aptitude Test (SAT), they have the opportunity to answer questions about their interests, academic record and activities. For example, the SDQ asks students questions regarding class rank, high school program, grades, honors courses and expected years of study in certain subjects. In addition, students respond to questions about their extra-curricular activities in sports, student government, cultural or social events. (See Appendix A for a copy of the SDQ.)

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* In order to be eligible for admission to the University of California, certain high school courses, which are often referred to as the "A-F" pattern, must be completed. This course sequence includes: (A) one year of history, (B) four years of English, (C) two years of mathematics, (D) one year of laboratory science, (E) two years of foreign language, and (F) one or two years of advanced courses.

The second data source is the admissions evaluation of the student's application, which includes high school academic record, grades and A-F subject omissions.

The third source is the student's college academic record showing University grade performance and persistence. (Appendix B lists the three sources of data and each of the individual items that were used in this study.)

Analytic Procedures: The actual analysis was completed in four phases. Phase one involved the preliminary task of gathering and organizing the three data sources. Because the objectives of this study concern non-traditional factors, only those students who had completed a SDQ were used as part of the study population.

Phase two involved a factor analysis of 68 items from the SDQ. Factor analysis is a method for determining the number and nature of the underlying variables among a larger number of variables. Thus, the purpose of this procedure was to reduce the overall number of variables to a more manageable size, and to identify the "dominant" items from the SDQ. It should be recognized that the SDQ does not provide information concerning social or personal disadvantaging factors (e.g., loss of a parent or family financial circumstances).

Phase three included a multiple regression analysis. Multiple regression is a method used to analyze the relationship between a dependent or criterion variable and a set of independent or predictor variables. Two sets of independent variables were used in this phase: the non-traditional factors identified in the factor analysis and traditional variables, such as high school GPA, SAT verbal score, and SAT math score. The criteria variables used were college GPA and persistence (number of quarters registered). These criteria were measured from the year of student admission and represent the cumulative college work of from one to ten academic quarters, depending on how long the student remained at the University.

Phase four made use of a discriminant analysis. This analysis assessed the ability of the predictor variables (traditional and non-traditional variables identified in phases two and three) to distinguish between those students who did and did not persist. All statistical analysis was performed on BMPD.*

Study Population Profile: A total of 667 freshman students were admitted and enrolled under the special action process in the Fall of 1978, 1979 and 1980. Of these, 444 (67%) complete student records were used in the study. There were 401 formula admissions and 43 committee admissions. Table 1 shows the ethnic composition and sex of these students by their year of admission. Major ethnic groups were Caucasian (43%) and Black (26%), and 54% of the students were male.

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* BMPD Statistical Software, University of California Press, 1981.

TABLE 1

SEX AND ETHNICITY OF SPECIAL ACTION STUDENTS
FOR FALL 1978, 1979 AND 1980*

	FALL 1978		FALL 1979		FALL 1980	
ETHNICITY	Male	Female	Male	Female	Male	Female
American Indian	2	0	1	0	0	1
Black	17	27	16	18	15	20
Caucasian	26	14	37	31	47	35
Chicano	8	6	5	5	9	5
Other Spanish	1	2	2	0	4	1
Chinese	3	3	1	6	9	7
East Indian	0	0	1	1	1	1
Japanese	0	1	3	3	1	1
Korean	0	0	3	0	2	0
Other Asian	1	0	1	1	1	0
Pilipino	1	0	0	1	4	3
Polynesian	2	0	0	0	1	0
Other	1	2	4	3	3	4
Decline to state	0	0	1	0	3	1
Total	52	55	75	69	100	79

* 4 cases are missing.

A majority of these students (82%) attended public high schools; the remaining 18% attended private schools. Almost all students reported that they were enrolled in an academic or college preparatory course pattern (82%); however, 14% were enrolled in a general education curriculum and less than 1% were in career-oriented or technical high school programs. As displayed in Table 2, approximately 70% or 300 of these students expect to

go beyond the baccalaureate level and pursue a master's or doctoral degree. Table 3 shows the persistence rate of these students by their year of admission.

TABLE 2

SELF-REPORTED EDUCATIONAL OBJECTIVE BY ETHNICITY*

ETHNICITY	SPECIAL-TWO YEAR	AA	OBJECTIVE BA-BS	MA-MS	PhD-MD-DVM	UNDECIDED
American Indian	0	0	0	1	2	1
Black	1	2	11	28	61	8
Caucasian	0	1	48	58	57	23
Chicano	1	1	9	7	16	3
Other Spanish	0	0	2	3	5	0
Chinese	0	0	6	6	12	4
East Indian	0	0	0	1	3	0
Japanese	0	0	1	5	2	1
Korean	0	0	1	2	1	0
Other Asian	0	0	0	1	2	1
Pilipino	1	0	2	1	5	0
Polynesian	0	0	0	1	2	0
Other	0	1	5	7	11	1
Total	3	5	85	121	179	42

* 9 cases are missing.

TABLE 3

STUDENT PERSISTENCE RATE BY YEAR OF ADMISSION

FIRST QUARTER REGISTERED	NUMBER OF STUDENTS	PERCENT ENROLLED IN SUBSEQUENT QUARTERS*									
		1	2	3	4	5	6	7	8	9	10
Fall 1978	117	100	97	91	79	71	64	56	55	54	45
Fall 1979	146	100	95	91	79	77	75	65			
Fall 1980	181	100	99	97	85						

* Fall 1981 was the most recent quarter analyzed in this study. Note that these special action statistics are not representative of regularly admitted students, who have much higher persistence rates.

IDENTIFICATION OF NON-TRADITIONAL FACTORS

The results of the factor analysis identified 18 meaningful clusters of student self-reported characteristics, strengths and weaknesses from a total of 68 SDQ items. In order to maintain a high level of meaningfulness, only the first ten factors were used in the remaining analyses. Table 4 describes the ten factors by identifying the groups of variables most correlated among themselves. (Appendix C lists the remaining eight factors.)

TABLE 4

VARIMAX FACTORS DERIVED FROM STUDENT DESCRIPTIVE QUETSIONNAIRE RESPONSES

FACTOR / VARIABLES CONTAINED IN FACTOR	LOADING	COMMUN-* ALITIES	PERCENT VARIANCE	CUMULATIVE PERCENT VARIANCE
1 Communicator/Leader			9	9
self-rating on spoken expression	.75	.63		
self-rating on written expression	.72	.72		
self-rating on leadership	.71	.68		
self-rating on organization of work	.69	.60		
self-rating on creative writing	.67	.64		
self-rating on getting along with others	.66	.59		
self-rating on sales	.66	.59		
self-rating on acting	.60	.63		
self-rating on scientific	.45	.64		
2 Academic Honor Courses			6	15
honor courses--biological sciences	.79	.68		
honor courses--physical sciences	.77	.67		
honor courses--math	.76	.66		
honor courses--foreign language	.59	.60		
honor courses--social studies	.56	.60		
honor courses--English	.45	.60		
3 Athletic Interest			5	20
participation rate in athletics	.83	.75		
participation rate in high school athletics	.79	.69		
plans to participate in college athletics	.77	.65		
self rating on athletics	.73	.76		
4 Academic Objective/High School Study			5	25
total expected years of high school study	.75	.89		
years of high school study in physical sciences	.70	.57		
years of high school study in math	.63	.59		
years of high school study in English	.45	.54		

(Table 4 cont.)

FACTOR VARIABLES CONTAINED IN FACTOR	LOADING	COMMUN-* ALITIES	PERCENT VARIANCE	CUMULATIVE PERCENT VARIANCE
5 Music, Art, Dance Interest			4	29
participation in high school art, music, dance	.79	.68		
plans to participate in college art, music, dance	.77	.72		
self-rating music	.55	.59		
advanced placement art, music	.54	.42		
self-rating artistic	.40	.56		
6 Academic Performance/Grade			3	32
self-report high school biological science grade	.73	.64		
self-report high school social studies grade	.59	.49		
self-report high school English grade	.58	.56		
self-report high school physical science grade	.56	.55		
7 School Activities Interest			4	36
participation rate in school organizations	.73	.63		
participation in school government	.72	.61		
plans to participate in college student government	.45	.52		
8 Math Interest			3	39
self-rating math	.72	.72		
self-rating high school math grade	.70	.62		
advanced placement mathematics	.41	.65		
9 Interest in Basic Skills Assistance			2	41
assistance guide in writing skill	.80	.68		
assistance guide in reading skill	.72	.63		
assistance guide in study skill	.64	.52		
assistance guide in math skill	.51	.54		
10 Religious/Church Interest			3	44
participation in high school religious groups	.83	.73		
plans to participate in college religious groups	.79	.72		
participation rate in community/ church groups	.59	.58		

Note: Loadings less than .40 omitted

* The communality indicates what percent of the variable's variance is accounted for by its factor.

Although the individual factors do not account for large proportions of student differences, the cumulative amount of variance explained by the ten factors is 44%. The factors that most strongly distinguish among students are the communicator/leader factor, which accounts for 9% of the self-report variance followed by academic honor courses (6%), athletic interest (5%), and academic objective/high school study (5%).

An obvious question concerning the use of these self-report factors is "How do we know that people won't lie?" A comprehensive report commissioned by the College Board reviewed a number of studies that evaluate student self-assessments of past and current educational and personal experiences, concentrating on their accuracy and predictive validity.* From the evidence available, student-reported information was often as valid for individual educational decisions as information gathered from archival sources (a more expensive process). In addition, the report concludes that if the questions are verifiable, carefully worded, and deal with relatively recent events and interests, answers to them can be used with some assurance.

However, it is important not to overinterpret these factors and their associated labels. Factors mean no more than the measures on which they are based. In this analysis, the factors that have been identified do clarify measures of interests, attitudes, and abilities based on the SDQ, and suggest traits that may be useful predictors of University performance.

PREDICTION OF COLLEGE GPA AND PERSISTENCE

In addition to the ten factor scores computed, 17 independent variables were entered for each student into a multiple regression analysis. Of the additional 17 variables entered, nine variables represent academic or traditional admission criteria. Table V lists the variables used in this analysis and identifies those variables currently used as special action admission criteria.

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* Baird, Leonard L. Using Self-reports to Predict Student Performance. Research Monograph Number 7. College Entrance Examination Board, 1976 p. 4.

TABLE 5

NON-TRADITIONAL AND TRADITIONAL VARIABLES USED
IN MULTIPLE REGRESSION ANALYSIS

VARIABLES	Non-Traditional	UCD ADMISSTION VARIABLES Traditional	Currently Used as Criteria: Formula Admissions	Committee Admissions
Type of High School (self-report)*	X			X
Class Size (self-report)	X			
Class Rank (self-report)	X			
High School Curriculum (self-report)*	X			
Part-time hours worked (self-report)*	X			X
Educational objective (self-report)*	X			
Sex*		X		X
Subject Omission--history		X	X	
Subject Omission--English		X	X	
Subject Omission--math		X	X	
Subject Omission--lab science		X	X	
Subject Omission--foreign language		X	X	
Subject Omission--advanced courses		X	X	
SAT--Verbal Score		X	X	
SAT--Math Score		X	X	
High School GPA		X	X	
Ethnicity*	X			X
Factor 1--Communicator/Leader	X			X
Factor 2--Academic Goals/Honor Courses	X			X
Factor 3--Athletic Interest	X			X
Factor 4--Academic Objective/ High School Study	X			
Factor 5--Music, Art, Dance Interest	X			X
Factor 6--Academic Performance/ Grades	X			
Factor 7--School Activities Interest	X			X
Factor 8--Math Interest	X			X
Factor 9--Assistance in Basic Skills Interest	X			
Factor 10--Religious/Church Interest	X			

* These independent variables are categorical and were recoded to dummy variables.

A forward stepping method of multiple regression was used to determine which of the 26 variables or combination of variables would best predict the criteria of college GPA and persistence. Six separate analyses were conducted controlling for time of admission (three entering years using the two criterion variables). For purposes of this research, all variables identified in the analyses are displayed in the following tables. However, reference and discussion will only be made to variables found statistically significant.

College GPA: Tables 6, 7 and 8 present the results of the multiple regression for the criterion of college GPA for students admitted in Fall 1978, 1979 and 1980. Although these analyses identified significant predictor variables, there is little validation of predictor variables across the admission periods (i.e., variables predictive of GPA for one entering class are not necessarily predictive for the other two classes).

TABLE 6

MULTIPLE CORRELATION BETWEEN COLLEGE GPA AND
PREDICTIVE VARIABLES FOR FALL 1978 SPECIAL ACTION ADMITTEES

VARIABLES	STANDARDIZED REGRESSION COEFFICIENT (Beta)	MULTIPLE R^2	CHANGE IN R^2
High School GPA	.384	.1400[a]	.1400
SAT Math Score	.397	.2156[a]	.0756
Factor 7--School Activities Interest	-.228	.2777[a]	.0621
Ethnicity--American Indian	.216	.3197[a]	.0419
Subject Omission--English	-.169	.3620[a]	.0423
Factor 1--Communicator/Leader	.199	.4033[b]	.0413
Ethnicity--Black	.208	.4190	.0157
Factor 3--Athletic Interest	-.113	.4304	.0114
Factor 6--Academic Performance/ Grades	-.188	.4434	.0130
Ethnicity--Chinese/Chinese American	.129	.4535	.0101
High School Curriculum--general	.158	.4623	.0088
Subject Omission--Advanced Course	-.168	.4707	.0084
Subject Omission--Lab Science	.278	.4837	.0131
Degree Objective--AA	.159	.4930	.0093
Ethnicity--Thai/Other Asian	.123	.5047	.0117
Ethnicity--Other	-.089	.5116	.0069
Part-time hours worked	-.088	.5178	.0061

[a] $p<.001$
[b] $p<.01$

For Fall 1978, approximately 22% of the variance in college GPA was explained by high school GPA and SAT math score alone; the four other significant variables accounted for another 18% of variance. Of these variables, high school GPA, SAT math score, Factor 1 (Communicator/Leader), and ethnicity--American Indian have positive standardized regression coefficients (beta weights).* Of particular interest in this set of positive beta value variables is ethnicity--American Indian. However, the merit of this result is limited because there were too few cases (n=2) to provide any conclusions in a practical sense.

Both subject omission in English and Factor 7 (School Activities Interest) vary inversely with the criterion (have negative beta weights). This outcome is not unexpected because students who had fewer subject omission units would be better prepared for college resulting in higher college GPA. Further, the negative value for Factor 7 (School Activities Interest) suggests that students who considered themselves active in high school extracurricular events may have completed less college preparatory work, resulting in a lower college GPA.

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* The beta value or the standardized regression coefficient indicates how much change in GPA is produced by a standardized change in one independent variable when the other variables are held constant. For instance, the positive relationship means that as the independent variable increases (or decreases), the resulting effect on GPA will be in the same direction. The outcome effect in a negative relationship on GPA will be in the opposite direction of the change in the independent variable.

TABLE 7

MULTIPLE CORRELATION BETWEEN COLLEGE GPA AND
PREDICTIVE VARIABLES FOR FALL 1979 SPECIAL ACTION ADMITTEES

VARIABLES	STANDARDIZED REGRESSION COEFFICIENT (Beta)	MULTIPLE R^2	CHANGE IN R^2
High School GPA	.455	.2214[a]	.2214
Ethnicity--American Indian	-.370	.2993[a]	.0779
SAT Verbal Score	.156	.3289[c]	.0296
Subject Omission--English	.073	.3426[a]	.0137
High School Curriculum--career	.150	.3527	.0102
Degree Objective--AA	.125	.3621	.0094
Subject Omission--History	-.093	.3698	.0077
Subject Omission--Math	.073	.3770	.0072
Degree Objective--MS/MA	.097	.3840	.0070
Ethnicity--East Indian/Pakistani	.081	.3902	.0062

[a] $p<.001$
[c] $p<.05$

Of the four variables retained as significant contributors for Fall 1979, three are traditional variables: high school GPA, SAT verbal score and subject omission in English. Although high school GPA and SAT verbal score have positive beta weights, it is surprising that subject omission in English is also positively weighted. However, the actual beta value of change in GPA will occur with a standardized change in English subject omissions. Of the significant variables, ethnicity--American Indian has a negative beta weight. As in Fall 1978, the numbers for ethnicity--American Indian were too small to be of any practical importance.

TABLE 8

MULTIPLE CORRELATION BETWEEN COLLEGE GPA AND
PREDICTIVE VARIABLES FOR FALL 1980 SPECIAL ACTION ADMITTEES

VARIABLES	STANDARDIZED REGRESSION COEFFICIENT (Beta)	MULTIPLE R^2	CHANGE IN R^2
SAT Math Score	.276	.0589[b]	.0589
Ethnicity--Thai/Other Asian	.219	.0949[b]	.0360
Degree Objective--PhD, MD, DVM	-.229	.1231[b]	.0282
Factor 9--Interest in Basic Skills Assistance	.101	.1450[b]	.0218
Subject Omission--Foreign Language	-.116	.1647[b]	.0198
Ethnicity--Other Spanish	.122	.1834[b]	.0187
Factor 5--Music, Art, Dance Interest	.138	.1980[b]	.0146
Sex	-.169	.2198[a]	.0218
Ethnicity--Black	-.194	.2328[b]	.0130
Degree Objective--BS/BA	-.122	.2453[b]	.0125
Ethnicity--Chinese/Chinese-American	-.143	.2525	.0072
SAT Verbal Score	-.109	.2581	.0056
Ethnicity--Korean	-.097	.2644	.0063
Subject Omission--Advanced Courses	-.122	.2698	.0054
Ethnicity--Pilipino	-.094	.2750	.0053

[a] $p<.001$
[b] $p<.01$

A larger group of variables was identified as meaningful for Fall 1980. With the exception of two traditional academic development variables, SAT math score and subject omission in foreign language, the remaining variables are non-traditional. Variables found significant account for 25% of the variance, much less than comparable figures for 1979 students (34%) or 1978 entrants (40%).* Of particular interest are the negative beta weights

* High school GPA, the most important predictor for 1978 and 1979 students, was not significant in predicted college GPA for 1980 admits. Note that college GPA is measured at different points in time for the entry years: for Fall 1978, 10 quarters of grades are averaged (unless a student dropped out, in which case fewer quarters are used); for Fall 1979, seven quarters of grades were available; and for Fall 1980, four quarters were available. Thus the fact that high school GPA dropped out of the analysis in 1980 may be due to either a basically differing population of students or a short-run college GPA being used as the criterion variable.

associated with the degree objectives PhD, MD, DVM, and BS/BA variables. It has been fairly well known for many years that level of aspiration is related to academic achievement; however, for Fall 1980 entrants, this association was not confirmed.

College persistence: Persistence represents another criterion of academic success and was correlated with the same 26 predictor variables. As shown in Tables 9, 10 and 11, the multiple correlation values are lower than those computed for the criterion of college GPA. In addition, each variable contribution to the increase in R^2 is slight, less than .10, with little validation of predictor variables across years. However, it is important to note that a majority of the variables retained in the analyses are non-traditional in nature.

TABLE 9

MULTIPLE CORRELATION BETWEEN COLLEGE PERSISTENCE AND PREDICTIVE VARIABLES FOR FALL 1978 SPECIAL ACTION ADMITTEES

VARIABLES	STANDARDIZED REGRESSION COEFFICIENT (Beta)	MULTIPLE R^2	CHANGE IN R^2
Ethnicity--Chicano	-.303	.0458[c]	.0458
SAT Math Score	.286	.0958[a]	.0500
Ethnicity--Black	-.032	.1272[c]	.0314
Factor 3--Athletic Interest	.168	.1550[c]	.0278
Ethnicity--Other Spanish	-.245	.1706	.0156
Subject Omission--History	-.189	.1896[c]	.0190
Part-time hours worked	-.101	.2067[c]	.0172
Ethnicity--Caucasian	-.253	.2224[c]	.0157
Subject Omission--Lab Science	.173	.2436[c]	.0211
Degree Objective--Other	.139	.2540	.0104
Factor 2--Academic Honor Courses	.132	.2653	.0113
Ethnicity--Pilipino	-.112	.2749	.0096
Factor 9--Interest in Basic Skills Assistance	.116	.2850	.0101
Factor 1--Communicator/Leader	.102	.2930	.0080

[a] $p<.001$
[c] $p<.05$

For Fall 1978, Factor 3 (Athletic Interest), part-time hours worked, and the ethnic categories of Chicano, Black, and Caucasian contributed significantly to the explained variance ($R^2=.2436$). It is difficult to interpret the effect of ethnicity on persistence. All the ethnic categories

identified as significant for Fall 1978 have negative beta weights. At best, the meaning of the ethnicity group beta values can provide only an index of the persistence outcome unique to 1978 entrants.

TABLE 10

MULTIPLE CORRELATION BETWEEN COLLEGE PERSISTENCE AND PREDICTIVE VARIABLES FOR FALL 1979 SPECIAL ACTION ADMITTEES

VARIABLES	STANDARDIZED REGRESSION COEFFICIENT (Beta)	MULTIPLE R^2	CHANGE IN R^2
High School GPA	.327	.0601[b]	.0601
Subject Omission--Lab Science	-.241	.1031[b]	.0430
Ethnicity--Caucasian	-.126	.1436[b]	.0406
High School Curriculum--general	.194	.1642[c]	.0206
Degree Objective--Other	-.157	.1850[b]	.0208
Part-time hours worked	-.117	.2027[b]	.0176
Factor 6--Academic Performance/ Grades	-.128	.2170[c]	.0143
Type of High School	-.139	.2291[c]	.0122
Ethnicity--American Indian	-.122	.2421[c]	.0130
Factor 7--School Activities Interest	.100	.2528	.0107
Degree Objective--AA	.097	.2613	.0085
Ethnicity--Chicano	-.090	.2685	.0072

[b] $p<.01$
[c] $p<.05$

Variables similar to Fall 1978 were isolated for Fall 1979. However, high school GPA and subject omission in lab science did account for approximately one half of the total explained variance. These, together with the remaining significant variables, explained 24% of the variance in college persistence. Although high school GPA proved to have a positive beta weight, Factor 6 (Academic Performance/Grades), a self-reported high school grade performance rating, has a negative weight. It is apparent that the validity of a student's self-report of grades is questionable. As in Fall 1978, the ethnicity categories and part-time hours worked have negative coefficients.

TABLE 11

MULTIPLE CORRELATION BETWEEN COLLEGE PERSISTENCE AND PREDICTIVE VARIABLES FOR FALL 1980 SPECIAL ACTION ADMITTEES

VARIABLES	STANDARDIZED REGRESSION COEFFICIENT (Beta)	MULTIPLE R^2	CHANGE IN R^2
Factor 6--Academic Performance/ Grades	-.230	.0514[b]	.0514
Factor 10--Religious Interest	-.247	.1032[b]	.0518
High School Curriculum--general	-.183	.1251[b]	.0218
Ethnicity--Black	-.165	.1432[b]	.0181
SAT Verbal Score	-.131	.1604[b]	.0172
Degree Objective--BS/BA	-.117	.1705	.0101
Subject Omission--English	.107	.1808[c]	.0104
Sex	.084	.1877	.0069

[b] $p<.01$
[c] $p<.05$

Of the seven predictor variables defined as significant for Fall 1980, two traditional variables, SAT verbal score and subject omission in English, were retained in the analysis. Factor 6 (Academic Performance/Grades) and Factor 10 (Religious Interest) together account for approximately one half of the total explained variance, $R^2=.1808$. Of particular interest is the negative coefficient associated with Factor 6 (Academic Performance/Grades). This variable proved to have a negative value for both Fall 1979 and 1980 which calls into question the utility of this variable as a valid self-report measure.

USE OF NON-TRADITIONAL AND TRADITIONAL FACTORS TO PREDICT COLLEGE PERSISTENCE

In order to better define the differences between persisters and non-persisters, a stepwise method of multiple discriminant analysis was used. Although a full set of persistence predictor variables have been identified through the multiple regression analyses, these findings provide little information about the group differences. Multiple discriminant analysis is similar to multiple regression analysis in that it involves the investigations of a criterion variable/predictor variable relationship. Specifically, it combines and weights the traditional and non-traditional measures to analyze how important each variable is in distinguishing (discriminating) between students who persist for one, two, or three years.

Table 12 shows the results of the multiple discriminant analysis for each year of student admission.

TABLE 12

RESULTS OF STEPWISE MULTIPLE DISCRIMINANT ANALYSIS
FOR FALL 1978, 1979 AND 1980 ENTRANTS

YEAR	SIGNIFICANT DISCRIMINANT VARIABLES	WILK'S LAMBDA	F-STATISTIC	DEGREES OF FREEDOM n		SIGNIFICANCE LEVEL
Fall 1978	Factor 9--Interest in Basic Skills Assistance	.76	5.0	6	206	p<.001
	Factor 2--Academic Honor Courses	.68	4.7	9	248	p<.001
Fall 1979	High School GPA	.88	4.2	4	264	p<.01
Fall 1980	Factor 6--Academic Performance/Grades	.96	6.2	1	160	p<.05

These findings suggest that certain non-traditional self-report variables are useful in classifying student persistence. For Fall 1978, the persistence rate was positively influenced by Factor 2 (Academic Honor Courses) and Factor 9 (Interest in Basic Skills Assistance). Of the 14 predictor variables identified in the multiple regression analysis for Fall 1978, these two factors proved to be the best set of discriminating variables. The traditional variable of high school GPA provides the greatest discriminating positive factor for Fall 1979. Although Factor 6 (Academic Performance/Grades) has a negative relationship with persistence, it is the single best discriminator for students entering in Fall 1980.

Table 13 shows how well these discriminant variables classify student persistence for each year respectively.

TABLE 13

CLASSIFICATION MATRIX OF ACTUAL VERSUS PREDICTED GROUP PERSISTENCE MEMBERSHIP FOR FALL 1978, 1979 AND 1980 ENTRANTS

FALL 1978 ENTRANTS

Actual	Last Year Registered Predicted				Total Cases	Total Percent Correct
	1978-79	1979-80	1980-81	Fall 1981		
1978-79	4	4	2	15	25	17.4
1979-80	3	9	2	12	26	34.6
1980-81	1	2	8	2	13	61.5
Fall 1981	3	6	3	41	53	77.4
Total	11	21	15	70	117	53.0

FALL 1979 ENTRANTS

Actual	Last Year Registered Predicted				Total Cases	Total Percent Correct
	1978-79	1979-80	1980-81	Fall 1981		
1979-80		12	11	8	31	38.7
1980-81		2	16	2	20	80.0
Fall 1981		30	46	19	95	20.0
Total		44	73	29	146	32.2

FALL 1980 ENTRANTS

Actual	Last Year Registered Predicted				Total Cases	Total Percent Correct
	1978-79	1979-80	1980-81	Fall 1981		
1980-81			17	12	29	58.6
Fall 1981			56	96	152	63.2
Total			73	108	181	62.4

The classification routine was able to correctly identify a total of 53.0%, 32.2%, and 62.4% of the students as members of the groups to which they actually belonged. It is apparent that there is considerable overlap among the groups and that they are not clearly separate even though the discrimination is statistically significant.

SUMMARY OF FINDINGS

The identification of high school GPA, test scores, and subject omissions as predictors of college GPA and persistence is not unexpected. For these traditional variables, it was anticipated that a positive relationship with both criteria would exist. In other words, if a student has a good high school GPA or SAT score, then the resulting effect on college performance would be good. On the other hand, for the traditional academic indices of A-F subject omissions, a negative relationship with both criteria was expected. Because the A-F subject omissions represent semesters of missing coursework, the fewer the subject omissions, the better a student is prepared for college and the better college GPA or persistence should be.

Although a relationship between the traditional variables can be readily hypothesized, it is difficult to identify similar relationships between the criteria and non-traditional variables. There is limited information about the use of non-traditional variables in admissions and in their use as predictors of student performance. Thus, this study provides at best a foundation of information on which to develop and formulate variable relationships for future research. The identification of several non-traditional variables that increased prediction of college performance encourages further research.

It must be recognized that time is a major factor in these analyses. The criteria of GPA and persistence are measured from the point of student admission and represent the activities of one to ten academic quarters: the cumulative GPA of students who entered in 1980 represents at most four quarters of college work; for 1978 entering students, 10 quarters. Because it is suspected that the variables most influential in accounting for short-run college performance were different from those accounting for long-run performance, the three entering classes were not combined in the analyses. This suspicion was confirmed. Also, the predictive power of the GPA equations was better for the population with the longest college record (R^2=.52 for 1978 entrants, R^2=.34 for Fall 1979, and R^2=.24 for Fall 1980). Short run college GPA may be inherently more unstable than long run GPA, or the 1980 entrants may simply be a more varied population. Further analysis (for example, using 3rd, 6th, and 9th quarter GPA) of these populations would be necessary to substantiate these suspicions. The predictive power of the persistence equations followed a similar but weaker time trend (R^2=.29, .27 and .19 for 1978, 1979 and 1980 entrants).

Tables 14 and 15 summarize the significant findings for each criteria for each entering class.

TABLE 14

STATISTICALLY SIGNIFICANT PREDICTOR VARIABLES AND RESULTING DIRECTIONAL EFFECT ON COLLEGE GPA FOR FALL 1978, 1979 AND 1980 ENTRANTS

VARIABLES	FALL 1978	FALL 1979	FALL 1980
High School GPA	+	+	
SAT Math Score	+		+
SAT Verbal Score		+	
Subject Omission--English	-	+	
Subject Omission--Foreign Language			-
Factor 1--Communicator/Leader	+		
Factor 3--Athletic Interest	-		
Factor 5--Music, Art, Dance Interest			+
Factor 7--School Activities Interest	+		
Factor 9--Interest in Basic Skills Assistance			+
Degree Objective--PhD, MD, DVM			-
Degree Objective--BS/BA			-
Ethnicity--American Indian	+	-	
Ethnicity--Black			-
Ethnicity--Latino			+
Ethnicity--Thai/Other Asian			+
Sex			-

TABLE 15

STATISTICALLY SIGNIFICANT PREDICTOR VARIABLES AND
RESULTING DIRECTIONAL EFFECT ON COLLEGE PERSISTENCE FOR
FALL 1978, 1979 AND 1980 ENTRANTS

VARIABLES	FALL 1978	FALL 1979	FALL 1980
High School GPA		+	
SAT Math Score	+		
SAT Verbal Score			-
Subject Omission--English			+
Subject Omission--History	-		
Subject Omission--Lab Science	+	+	
Factor 3--Athletic Interest	+		
Factor 6--Academic Performance/Grades		-	-
Factor 10--Religious Interest			-
Degree Objective--Other		-	
High School Curriculum--general		+	
Type of High School		-	
Part-time hours worked	-	-	
Ethnicity--American Indian		-	
Ethnicity--Black	-		-
Ethnicity--Caucasian	-	-	
Ethnicity--Chicano	-		

The college GPA and persistence predictor variables identified for Fall 1978 reveal that the effect of the traditional variables are in the direction expected with the exception of subject omission in Lab Science. Three non-traditional variables, Factor 1, Factor 3, and ethnicity were important: Factor 1 (Communicator/Leader) suggests that students who perceive themselves as good communicator/leaders tend to have a better college GPA. Factor 3 (Athletic Interest) presents a positive effect on student persistence but a negative effect on college GPA. It appears that the amount of time a student participates in sports may detract from his/her GPA; on the other hand, it may provide a form of incentive to persist. The ethnic categories Black, Caucasian, American Indian and Chicano were negatively related to persistence in this entering class. The non-traditional variable of ethnicity--American Indian has already been noted as having limited practical usefulness because of the small numbers of entrants (n=2). It seems likely that ethnicity represents (i.e., is a stand-in for) a composite of variables missing in this study, such as family income and various forms of educational disadvantage.

As in Fall 1978, Fall 1979 results confirmed the hypothesized relationship between the criterion variables and high school GPA and SAT verbal score. Subject omission English had a positive influence on college GPA while subject omission Lab Science had a positive effect on persistence. Surprisingly, Factor 6 (Academic Performance/Grades) had a negative relationship with college persistence. Because Factor 6 attempts to provide a

self-report measure similar to high school GPA, it was anticipated that the criterion to Factor 6 relationship would be similar to that of high school GPA. Whereas high school GPA was correlated positively with both college persistence and GPA, Factor 6 has been shown to have a negative relationship with persistence: students who self-reported good high school grades had lower persistence rates.

In the Fall 1980 analysis, both Factors 5 (Music, Dance, Art Interest) and Factor 9 (Interest in Basic Skills Assistance) had positive influences on college GPA. However, the degree objectives PhD, MD, DVM and BS/BA had a negative effect on college GPA. In addition, the traditional academic variables, SAT verbal score and subject omission in English, also tended to negatively effect college persistence rates (i.e., students who had poor SAT verbal scores and English subject omissions had lower persistence rates). As in Fall 1979, Factor 6 (Academic Performance/Grades) had a negative relationship with college persistence.

It is apparent in these study analyses that little cross validation exists for non-traditional as well as traditional variables across the admission years for this population. The results of a stepwise multiple discriminant analysis did not provide any additional variable validation across years, but did identify the variables that most effectively discriminated between persisters and non-persisters. In addition, it confirmed the directional relationship between the discriminating variables and persistence that was shown in the multiple regression analysis. For Fall 1978, Factor 9 (Interest in Basic Skills Assistance) and Factor 2 (Academic Honor Courses) defined persisters and non-persisters best. Specifically, students who considered themselves as needing basic skills assistance and students who self-reported themselves as honor course students persisted longer. Fall 1979 persistence rates were most significantly and positively influenced by high school GPA; for Fall 1980, Factor 6 (Academic Performance/Grades) was the best discriminator for persistence. As in the multiple regression analyses, Factor 6 proved to have a negative effect on student persistence and substantiates the suspicion that self-report grades may not be valid.

CONCLUSION

Before these results can be applied in an actual admission procedure, more research needs to be done concerning the appropriateness of a self-report instrument and the method of information collection for the UC Davis campus. However, the evidence from this study suggests that non-traditional items can be measured and used in an evaluation of student performance.

Although several non-traditional variables were identified as predictor factors, these results do not imply that academic development variables should be ignored in deference to non-traditional variables for student selection. The multiple regression analyses identified a combination of key traditional and non-traditional variables that were the best predictors of college GPA and persistence (number of quarters registered). Often, traditional variables had more predictive validity than non-traditional variables even for this non-traditional and highly varied population of students. However, these results do tell us that "success" in college is dependent on a number of variables representing both the academic and non-academic development of students.

Of particular interest were the results of the multiple discriminant analysis. The variables identified included the non-traditional variables of Factor 9 (Interest in Basic Skills Assistance), Factor 2 (Academic Honor Courses), Factor 6 (Academic Performance/Grades) and the traditional variable high school GPA. These findings suggest that the major admissions characteristic differences between the groups of persisters and non-persisters are based less on traditional variables than on non-traditional variables. If the current admission criteria, which relies more upon traditional rather than non-traditional variables, accurately assessed the ability of students to persist, then it would be expected to appear as a major group difference. As it is, persisters and non-persisters did not differ significantly on any traditional admission characteristics (such as subject omissions, SAT verbal or math score) other than high school GPA.

Because the multiple discriminant analyses provide at best a description of the admission characteristics that separate persisters from non-persisters, these results must be reviewed with some caution. For instance, the existing special action admissions procedure was 64% and 75% "successful," if success is judged by students persisting through the 6th quarter of study (figures based on 1978 and 1979 entrants). The discriminant analysis predicted that 89% and 81% of the entering classes would persist.* For Fall 1978, the difference between the discriminant group prediction and actual rates is substantial (25%); whereas, the difference for Fall 1979 is smaller (9%). The discrepancy between the discriminant prediction and actual persistence data postulates that there are more variables involved in a student's decision to persist or not to persist than what was considered in the multiple discriminant analyses.

There are several data limitations to the current study that may have affected these study outcomes. Specifically, the SDQ did not disclose sensitive information, such as family financial situation, family size, or other disadvantaging factors that may be influential variables in prediction studies of this kind. In addition, this study population is far from homogeneous, and represents a composite of diverse ethnic and family backgrounds, academic development levels, interests and abilities. These areas should be considered in future research efforts or in the development of a UC Davis self-report instrument.

The findings of the multiple regression analyses coupled with the multiple discriminant analyses indicate that (1) both traditional variable and non-traditional variables are influential predictors of academic

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* These figures are calculated from Table 13. For example, the total number of non-persisters correctly identified for Fall 1978 is 13 (1978-79=4, and 1979-80=9). The resulting number of persisters through 6 quarters is 104 (117-13=104). Of the 117 Fall 1978 entrants, 104 or 89% persisted through their 6th quarter. This calculation method was also used to determine the percentage of persisters for Fall 1979 entrants.

achievement, and (2) the predictive power of traditional variables decreases with time while that of non-traditional variables may not. That is, traditional variables are more effective predictors than non-traditional variables for the relatively heterogeneous population of freshman students. Persistence and GPA of the more academically homogeneous group of sophomores is as well predicted by non-traditional as traditional variables. In addition, the discriminating ability of the current admission criteria to predict persistence and non-persistence is limited. Thus the use of non-traditional variables can be expected to be important for selection, even though they are not very useful for short term prediction.

The SDQ instrument itself, which is completed at the time students apply for the SAT, does not provide an appropriate data collection method for the UC Davis campus. Because the SDQ is a voluntary questionnaire (with a two-thirds response rate), it would be difficult to use as a standardized data collection method. Moreover, there may be additional emphases or questions specific to the Davis campus that should be included in a data collection instrument. Although further research needs to be done to identify more specifically the optimal combination of traditional and non-traditional variables for an admission decision, it should be done in conjunction with the development of a standardized data collection method for the UC Davis campus. Additional research also needs to be done concerning the validation of these findings across similar time parameters: 6th quarter, 9th quarter and 12th quarter data for Fall 1978, 1979 and 1980 entrants.

THE STUDENT DESCRIPTIVE QUESTIONNAIRE

Your name will be made available to the Student Search Service only if you answer "YES" to this item.

(I) Yes, I want to be included in the Student Search Service.
(II) No, I do not want to be included in the Student Search Service.

1. What kind of high school are you attending?
   (A) Public (B) Other than public

2. Which of the following best describes your present high school program?
   (A) Academic or college preparatory
   (B) General
   (C) Career-oriented (business, vocational, industrial arts)
   (D) Other

3. About how many students are there in your high school class?
   (A) Fewer than 100 (B) 100-249 (C) 250-499
   (D) 500-749 (E) 750 or more

4. What is your most recent high school class rank? (For example, if you are 10th in a class of 100, you are in the second tenth.) If you do not know your rank or rank is not used in your school, give your best estimate.
   (A) Highest tenth (B) Second tenth } top fifth
   (C) Second fifth
   (D) Middle fifth
   (E) Fourth fifth
   (F) Lowest fifth

Questions 6 through 11 ask you to blacken the letter corresponding to the total years of study you expect to complete in certain subject areas. Include in this total only courses you have taken since beginning the ninth grade and those you expect to complete before graduation from high school. Count less than a full year in a subject as a full year. Do not count a repeated year of the same course as an additional year of study.

   (A) One year or the equivalent
   (B) Two years or the equivalent
   (C) Three years or the equivalent
   (D) Four years or the equivalent
   (E) More than four years or the equivalent
   (F) I will not take any courses in the subject area.

6. English
7. Mathematics
8. Foreign Languages
9. Biological Sciences (for example, biology, botany, or zoology)
10. Physical Sciences (for example, chemistry, physics, or earth science)
11. Social Studies (for example, history, government, or geography)

For each of the subject areas in questions 12 through 17, blacken the *latest* year-end or midyear grade you received since beginning the ninth grade. For example, if you are a senior and have not taken biology or any other biological science since your sophomore year, indicate that year-end grade. If you are a junior and have completed the first half of the year in an English course, indicate that midyear grade.

If you received the grade in an advanced, accelerated, or honors course, also blacken the letter H.

   (A) Excellent (usually 90-100)
   (B) Good (usually 80-89)
   (C) Fair (usually 70-79)
   (D) Passing (usually 60-69)
   (F) Failing (usually 59 or below)
   (S) Only "pass-fail" grades were assigned and I received a pass.
   (H) The grade reported was in an advanced, accelerated, or honors course.

12. English
13. Mathematics
14. Foreign Languages
15. Biological Sciences
16. Physical Sciences
17. Social Studies

18. Will you have completed advanced high school or college-level work before entering college? If so, mark the letter for each field in which you plan to apply for advanced placement, credit-by-examination, or exemption from required courses.
   (A) English
   (B) Mathematics
   (C) Foreign Languages
   (D) Biological Sciences
   (E) Physical Sciences
   (F) Social Studies
   (G) Art/Music

19. On the average, how many hours per week do you work in a part-time job? (Exclude vacations.)
   (A) None (E) 16 to 20 hours
   (B) Less than 6 hours (F) 21 to 25 hours
   (C) 6 to 10 hours (G) 26 to 30 hours
   (D) 11 to 15 hours (H) More than 30 hours

20. How much have you participated in community or church groups while in high school?
   (A) I have not been a member of any community or church group.
   (B) I have belonged to one or two groups but have not participated actively.
   (C) I have participated actively in one or two groups but have not held any major offices (for example, president, chairman, or treasurer).
   (D) I have participated actively in more than two groups but have not held any major offices.
   (E) I have participated actively and have held a major office in at least one community or church group.

21. How much have you participated in athletics in or out of high school?
   (A) I have not participated in athletics.
   (B) I have participated in individual or intramural athletics.
   (C) I have been on one or more varsity teams but have not earned a varsity letter.
   (D) I have earned one or more varsity letters in a single sport.
   (E) I have earned varsity letters in more than one sport.

THE STUDENT DESCRIPTIVE QUESTIONNAIRE

32. How much have you participated in clubs and organizations in high school?
    (A) I have not been a member of any club or organization.
    (B) I have belonged to some organizations but have not held any major offices (for example, president, editor, or class or school representative).
    (C) I have held one or two major offices.
    (D) I have held three or four major offices.
    (E) I have held five or more major offices.

33. During your high school years how many honors or awards (for example, essay contest, debating tournament, science fair, music, art or theater competition or membership in a scholastic honors group) have you received?
    (A) None (B) One or two (C) Three or four
    (D) Five or six (E) Seven or more

34. What is the highest level of education you plan to complete beyond high school?
    (A) A two-year specialized training program (for example, electronics or laboratory technician)
    (B) A two-year Associate of Arts degree (A.A.)
    (C) Bachelor's degree (B.A. or B.S.)
    (D) Master's degree (M.A. or M.S.)
    (E) Doctor's or other professional degree (such as M.D. or Ph.D.)
    (F) Other or undecided

35. What is the date of your high school graduation? Mention month and last two digits of year.

36. When do you expect to enter college? Mention month and last two digits of year.

Your response to question 37 will not be included in the reports that are sent to you, your school, and the colleges you designate.

37. Do you plan to apply for financial aid at any college?
    (Y) Yes (N) No

38. When you enroll, do you expect to attend college
    (A) full-time (B) part-time

39. When you enroll, do you expect to attend college during the
    (A) day (B) evening

40. Where do you prefer to live during your first two years in college?
    (A) At home
    (B) Single-sex dorm
    (C) Coed dorm
    (D) Fraternity or sorority house
    (E) On-campus apartment
    (F) Off-campus apartment

41. Are you a United States citizen?
    (Y) Yes (N) No

42. Are you a veteran of the United States Armed Forces?
    (Y) Yes (N) No

Questions 33 through 38 are for students who have finished high school and have already attended college. If you have not, go on to the paragraph preceding question 37.

36. Please put the code number of the college you are attending or most recently attended in the spaces provided and blacken the corresponding ovals. See the gray-bordered pages for college code numbers.

34. Are you enrolled in that college now?
    (Y) Yes (N) No

35. Approximately what was your grade point average at that college on a scale of 0 (F) to 4 (A)?
    (A) 3.5 or above
    (B) 3.0—3.4
    (C) 2.5—2.9
    (D) 2.0—2.4
    (E) 1.5—1.9
    (F) Below 1.5
    (G) Not applicable

35. If you expect to transfer credits, at what level do you expect to enter the new college?
    (A) First semester freshman
    (B) Second semester freshman
    (C) First semester sophomore
    (D) Second semester sophomore
    (E) Junior
    (F) Senior

The College Board wants its tests and services to be fair and useful to all candidates. Research based on responses to questions 37 and 38 will help the College Board evaluate and improve its tests and services. Your responses will also be reported to your school and to those colleges that accept such information in order to make sure their programs are fair and useful to students of all racial and ethnic backgrounds.

37. How do you describe yourself?
    (A) American Indian
    (B) Black or Afro-American or Negro
    (C) Mexican-American or Chicano
    (D) Oriental or Asian-American
    (E) Puerto Rican
    (F) White or Caucasian
    (G) Other

38. Is English your best language?
    (Y) Yes (N) No

Your responses to questions 39 and 40 will be used only for research. They will not be included in the ATP Reports that are sent to you, your school, and the colleges you designate.

39. Indicate the highest level of education completed by your father or male guardian.
    (A) Grade school
    (B) Some high school
    (C) High school diploma
    (D) Business or trade school
    (E) Some college
    (F) Bachelor's degree
    (G) Some graduate or professional school
    (H) Graduate or professional degree

40. Using the list in question 39, indicate the highest level of education completed by your mother or female guardian.

Questions 41 through 43 ask about your parents' financial situation and should be answered in consultation with them. Your individual responses will not be reported to anyone. Only summary responses for groups of students will be reported to colleges and high schools.

41. How many persons are dependent on your parent(s) or legal guardian for financial support? Be sure to include your parent(s) and yourself.
(A) Two (B) Three (C) Four (D) Five
(E) Six (F) Seven (G) Eight (H) Nine or more

42. During your first year in college, how many persons dependent on your parent(s) or legal guardian will be in college? Include yourself.
(A) One (B) Two (C) Three
(D) Four (E) Five or more

43. What was the approximate income of your parents before taxes last year? Include taxable and nontaxable income from all sources.
(A) Less than $3,000 a year (about $57 a week or less)
(B) Between $3,000 and $5,999 a year (from $58 to $114 a week)
(C) Between $6,000 and $7,499 a year (from $115 to $144 a week)
(D) Between $7,500 and $8,999 a year (from $145 to $174 a week)
(E) Between $9,000 and $10,499 a year (from $175 to $201 a week)
(F) Between $10,500 and $11,999 a year (from $202 to $230 a week)
(G) Between $12,000 and $13,499 a year (from $231 to $260 a week)
(H) Between $13,500 and $14,999 a year (from $270 to $305 a week)
(I) Between $15,000 and $16,499 a year (from $306 to $317 a week)
(J) Between $16,500 and $17,999 a year (from $318 to $345 a week)
(K) Between $18,000 and $19,999 a year (from $347 to $385 a week)
(L) Between $20,000 and $21,999 a year
(M) Between $22,000 and $23,999 a year
(N) Between $24,000 and $25,999 a year
(O) Between $26,000 and $27,999 a year
(P) Between $28,000 and $29,999 a year
(Q) More than $30,000 a year

44. You may want to receive help or tutoring outside regular course work from the college you plan to attend. If so, blacken the letter for each area in which you may want help.
(A) Counseling about educational plans and opportunities
(B) Counseling about vocational/career plans and opportunities
(C) Improving mathematical ability
(D) Finding part-time work
(E) Counseling about personal problems
(F) Increasing reading ability
(G) Developing good study habits
(H) Improving writing ability

Questions 45 and 46 concern your interests in extracurricular activities in high school and your plans to participate in college.

45. Blacken the letter for each activity in which you participated while in high school.
(A) Athletics—interscholastic, intramural, or community
(B) Ethnic or racial activities or organizations
(C) Journalism, debating, or dramatic activities
(D) Art, music, or dance
(E) Preprofessional or departmental clubs—for example, Future Teachers of America, American Society of Civil Engineers
(F) Religious activities or organizations
(G) Social clubs or community organizations
(H) Student government

46. Using the list in question 45, blacken the letter for each activity in which you plan to participate in college.

Questions 47 through 60 concern how you feel you compare with other people your own age in certain areas of ability. For each field, blacken the letter
(A) If you feel you are in the highest 1 percent in that area of ability
(B) If you feel you are in the highest 10 percent in that area of ability
(C) If you feel you are above average in that area of ability
(D) If you feel you are average in that area of ability
(E) If you feel you are below average in that area of ability

47. Acting ability
48. Artistic ability
49. Athletic ability
50. Creative writing
51. Getting along with others
52. Leadership ability
53. Mathematical ability
54. Mechanical ability
55. Musical ability
56. Organizing work
57. Sales ability
58. Scientific ability
59. Spoken expression
60. Written expression

61. From the list on the next page, choose the field that would be your first choice for your college curriculum. Write the number of that field and blacken the corresponding ovals.

62. From the same list, choose the field that would be your second choice. Write the number of that field and blacken the corresponding ovals.

63. From the same list, choose the career field that you think you will pursue after college. Write the number of that field and blacken the corresponding ovals. If your exact choice does not appear, select the one most closely related.

APPENDIX B

DATA SOURCES AND DESCRIPTION

College Board--Student Descriptive Questionnaire
English as a second language
US citizen, non-citizen
US veteran, non-veteran
Type of high school: private or public
Class size
Class rank
High school preparatory program: college preparatory, general, career oriented, and other
Self-reported high school grades in English, math, foreign language, biological science, physical science and social studies
Self-reported honor course study in English, math, foreign language, biological sciences, physical science and social studies
Self-reported years of study in English, math, foreign language, biological sciences, physical science and social studies
Part-time hours worked
Intended major #1
Intended major #2
Educational objective
Career interests
Housing preference: on or off campus
Self-rating on skills--acting, artistic, athletic, creative writing, getting along with others, leadership, math, mechanical, music, organization of work, sales, scientific, spoken expression, written expression
Extra-curricular activities in athletics, ethnic, journalism, art-music-dance, pre-professional clubs, religious, social, student government, school organizations, scholastic honors and awards
Assistance needs for educational counseling, vocational counseling, math skills, part-time work, personal counsel, reading skills, study skills, writing skills
Advanced placement plans in English, math, foreign language, biological science, physical science, social studies, art/music

UC Davis Freshman Evaluation
Admission Action: formula or committee
High school academic record and grades
Subject omissions
SAT test scores
Ethnicity
High school grade point average

UC Davis Academic Record
Cumulative UCD grade point average
Persistence by quarter

APPENDIX C (Continued from Table 4 pg. 9)

VARIMAX FACTORS DERIVED FROM STUDENT DESCRIPTIVE QUESTIONNAIRE RESPONSES (FACTORS 11-18)

FACTOR VARIABLES CONTAINED IN FACTOR	LOADING	COMMUN-* ALITIES	PERCENT VARIANCE	CUMULATIVE PERCENT VARIANCE
11 Political Science Interest			2	46
Advanced placement in English	.72	.59		
Advanced placement in social studies	.65	.63		
12 Ethnic Group Interest			3	49
Plans to participate in college ethnic groups	.80	.73		
Participation in high school ethnic groups	.80	.72		
13 Journalism Interest			2	51
Plans to participate in college journalism	.70	.67		
Participation in high school journalism	.64	.61		
14 Biological Science Interest			2	53
Advanced placement in biological science	.70	.58		
Years of high school study of biological science	.65			
15 Foreign Language Interest			2	55
Years of high school study in foreign language	.79	.70		
Advanced placement in foreign language	.64	.64		
16 Undecided Objectives			1	56
Assistance guide vocational counseling	.73	.58		
Assistance guide educational counseling	.69	.53		
17 Social Club Interest			2	58
Plans to participate in college social clubs	.83	.76		
Participation in high school social clubs	.77	.71		
18 Pre-professional Club Interest			2	58
Plans to participate in college pre-professional clubs	.82	.72		
Participation in high school pre-professional clubs	.62	.59		

* The communality indicates what percent of the variable's variance is accounted for by its factor.